

REMARKS

Claims 1-51 are in the application. Claims 1, 5, 6, 9, 11, 13, 18, 19, 24, 28, 29, 32, 34, 36, 41, and 42 are amended herein. Claims 50-51 are new. Claims 6-12 and 29-35 are objected to, but would be allowable if rewritten in independent form, including the limitations of the base claim and any intermediate claims. Claims 1-5, 13-28, and 36-49 stand rejected over the prior art.

Regarding claims 6-12 and 29-35, claims 6, 9, 11, 29, 32, 34 have each been rewritten in independent form as recommended by the Examiner, with other non-substantive changes to improve readability and provide antecedent basis to certain terms. Therefore, claims 6-12 and 29-35, Applicant respectfully submits, are allowable.

Regarding claims 1-5, 13-28, and 36-51, the independent ones of these claims have been amended to recite one or limitations that are neither taught nor suggested by the cited prior art, considered singly or in combination.

Consider claim 1. As amended, that claim recites two features. The first is that the one or more predetermined collection areas are “located on a symbol constellation defining a plurality of symbols, wherein the one or more predetermined collection areas are exclusive of the plurality of symbols defined by the symbol constellation.” The second is that the count is associated “with a value, from which the estimated SNR – related parameter is derived, using one or more lookup tables.”

The first feature is supported, for example, by Figures 7A-7E and related text, each showing one or more predetermined collection areas located on a symbol constellation, wherein the one or more predetermined collection areas are exclusive of the symbols defined by the symbol constellation. In Figure 7A, for example, the predetermined collection area 702 is located on symbol constellation 700, and exclusive of the symbols s_1 - s_8 defined by the symbol constellation 700. The second feature is supported, for example, at pages 19-21 of the specification.

The cited art does not teach or suggest the combination of these two features. Turning first to Fargues, while a non-preferred embodiment of Fargues does disclose the

first feature, *see, e.g.*, the areas 30-34 shown in Fig. 3, as the Examiner admits on page 7 of the Office Action, Fargues does not disclose the second feature. Moreover, considered as a whole, Fargues teaches away from the first feature. That is shown by the following passage from Col. 4, lines 38-48 of Fargues, which teaches that counting optimal samples (equivalent to using collection areas that coincide with the symbols) is preferred because it is more efficient than counting indicative samples (equivalent to using collection areas that are exclusive of the symbols):

Note in passing that NBEE is equal to NBET-NBEO here. NBET is the total number of samples received in the given time period. **This process is therefore equivalent to counting the number of optimal samples received and the total number of samples received to determine Eb/No.** It is easier to compare each sample received with four possible optimal samples than to compare each sample received with the indicative samples (the number of which is much greater). **This solution will therefore be preferable in the practical implementation of the device of the invention as described below.** (Emphasis added).

Turning next to Fukuhara, Fukuhara does not teach or suggest the first feature. Although the Examiner claims that Col. 3, lines 41-51, of Fukuhara discloses the second feature, that is incorrect because this passage does not mention lookup tables, and nothing in this passage suggests that a lookup table is used here to associate the “stored in advance” S/N ratio values with the corresponding subtraction values (M_1-M_2):

S/N ratio calculation unit 10 may be composed of a microprocessor which includes a CPU, a memory and an interface combined in a well-known manner. **Stored in advance in the memory of unit 10 are S/N ratio values corresponding to various subtraction values (M_1-M_2) derived from subtraction unit 9.** Calculation unit 10 derives a S/N ratio from the predetermined correlation between the memory contents and the subtraction value, shown by a graph of FIG. 7 in which indicia such as $Q/2$ and Q underlying the axis of abscissas should be used. (Emphasis added).

In fact, a number of other data structures, such as data trees, are possible. *See* “Introduction to Algorithms,” by Thomas H. Cormen, *et al.*, The MIT Press, Cambridge, MA. Therefore, the Examiner’s claim, that these values are necessarily associated

through a lookup table, is incorrect. Accordingly, it cannot be said that Fukuhara teaches or suggests the second feature.

Turning next to the combination of Fargues and Fukuhara, the Examiner claims that the motivation to combine these two references is the accelerated processing referred to at Col. 6, lines 12-16 of Fargues:

As previously mentioned, it is also possible to store in the memory 61 only the coordinates of the optimal samples in which case the calculating means 63 calculate the ratio $(NBET-NBEO)/NBET$. This **accelerates processing** and reduces the size of the memory. (Emphasis added).

However, in the above passage, Fargues teaches accelerated processing by counting **optimal samples**, which is equivalent to using collection areas that coincide with the symbols defined by the symbol constellation. Fukuhara reinforces this teaching by its disclosure of a binary system, *i.e.*, where the only possible symbols are a logical “1” or a logical “0,” that derives a S/N ratio from a subtraction value (M_1-M_2) , where M_1 is a count of the number of logical “1”s received and M_2 is a count of the number of logical “0”s received. *See* Fukuhara, Col. 3, lines 30-40. By disclosing the counting of logical “1”s and logical “0”s, which are the only possible symbols in the binary system of Fukuhara, Fukuhara teaches using collection areas that coincide with the possible symbols, *i.e.*, the logical “1”s and “0”s.

Therefore, in any combination of Fargues and Fukuhara that might ensue, the collection areas would coincide with the symbols defined by the symbol constellation, and would not be exclusive of those symbols as required by claim 1 as amended. Col. 6, lines 12-16, of Fargues teaches this. Col. 4, lines 38-48 of Fargues teaches this. And Fukuhara teaches this. Furthermore, assuming further, that in any such combination, the counts/subtraction values and their corresponding S/N ratios would be “stored in advance” in a memory as described at Col. 3, lines 41-51 of Fukuhara, there is nothing indicating these values would necessarily be arranged in the form of a lookup table. Instead, it is entirely possible that these values would be arranged as another data structure, such as a data tree. Accordingly, it cannot be said that the combination of Fargues and Fukuhara meets the second feature either.

In light of the foregoing, neither Fargues, Fukuhara, nor the combination of Fargues and Fukuhara teaches or suggests the combination of two features recited in claim 1 as amended. Nor do the other cited references, Smallcomb, Hemmati, Classon, or Sullivan. Therefore, claim 1 is patentable over these references, considered singly or in combination. The same conclusion applies to claims 2-5, which depend, directly or indirectly, on claim 1. It also applies to claims 13-28 and 36-52, each of which either recites the same two features as claim 1, or depends, directly or indirectly, on a claim that recites these two features.

Turning next to claims 41-42, 50-51 and 43-49 (with claims 41 or 42 as the base claim), these claims are also patentable over the cited references for the additional reason that each recites a third feature, wherein the count is averaged, filtered or summed over a plurality of symbol groups. This third feature is unmet by the cited references, considered singly or in combination. This feature is also supported, for example, at page 4, lines 16-17, and page 19, lines 5-8, of the application, disclosing filtering and/or averaging the count over a plurality of symbol groups, and pages 19-21 of the application, discussing an implementation where the count is summed over a plurality of symbol groups, with the number of symbol groups being given by Num_Windows.

For all the foregoing reasons, reconsideration of and withdrawal of all outstanding rejections is respectfully requested. The Examiner is earnestly solicited to allow all claims, and pass this application to issuance.

The Commissioner is hereby authorized to charge any fee owed in connection with this Response to Deposit Account No. **08-3038**, referencing Docket No. **01827.0050.00US00**. Additionally, if further extensions of time are required, the Commissioner is authorized to treat this response as including a petition, pursuant to 37 CFR 1.136(a), requesting an extension of time of the number of months necessary to make this Response timely filed. The petition fee due in connection therewith may be charged to Deposit Account No. 08-3038.

To expedite allowance of this case, the Examiner is earnestly invited to call the undersigned at (949) 759-5269.

Respectfully submitted,

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